

CLAIMS

What is claimed is:

1. A recliner assembly comprising:
 - a first housing plate;
 - a second housing plate rotatably supported by said first housing plate;
 - a first pawl movable between a locked position engaging said second housing plate and an unlocked position disengaged from said second housing plate, said pawl operable to apply a primary force to said second housing plate in a locked position having a first force component generally normal to the engagement of said pawl and said second housing plate and a second force component generally perpendicular to said first force component;
 - a first locking cam rotatably supported by said first housing plate; and
 - a main cam rotatably supported by said first housing plate, said main cam operable to selectively rotate said first locking cam into engagement with said first pawl to urge said first pawl into said locked position.
2. The recliner assembly of Claim 1 further comprising a second pawl, said second pawl movable between a locked position engaging said second housing plate to prohibit rotation of said second housing plate relative to said first housing plate and an unlocked position disengaging said second housing plate to enable rotation of said second housing plate relative to said first housing plate.

3. The recliner assembly of Claim 2 further comprising a second locking cam, said second locking cam rotatably supported by said first housing plate and operable to engage said second pawl to urge said second pawl into said locked position in response to rotation of said main cam.

4. The recliner assembly of Claim 1 further comprising a release cam, said release cam rotatably supported by said first housing plate and operable to toggle said first pawl between said locked and unlocked positions.

5. The recliner assembly of Claim 4, wherein said release cam includes a cam surface slidably engaging said first pawl to toggle said first pawl between said locked and unlocked positions.

6. The recliner assembly of Claim 1 further comprising a biasing member, said biasing member acting on said main cam to bias said main cam into engagement with said first locking cam to thereby urge said first pawl into said locked position.

7. The recliner assembly of Claim 1, wherein said first locking cam includes an engagement face operable to selectively receive said main cam.

8. The recliner assembly of Claim 7, wherein said engagement face is formed at an angular relationship with said first pawl, said engagement face operable to apply said primary force to said first pawl at an angle between 14-22°.

9. The recliner assembly of Claim 1, wherein said main cam includes a first engagement arm and a second engagement arm, said first engagement arm in contact with said first pawl to selectively toggle said pawl between said locked and unlocked positions and said second engagement arm positioned a predetermined distance away from said first pawl when said first pawl is in said locked position.

10. A recliner assembly comprising:

a first housing plate;

a second housing plate rotatably supported by said first housing plate;

a first pawl comprising a first and second arm, said first pawl slidably supported by said first housing plate and movable between a locked position engaging said second housing plate to prohibit rotation of said second housing plate relative to said first housing plate and an unlocked position disengaging said second housing plate to enable rotation of said second housing plate relative to said first housing plate;

a first locking cam rotatably supported by said first housing plate and operable to engage said first arm of said first pawl to urge said first pawl into said locked position; and

a main cam comprising a first extension and a second extension, said first extension abutting said first locking cam to rotate said locking cam and urge said first pawl into said locked position and said second extension spaced apart a predetermined distance from said second arm of said first pawl when said first pawl is in said locked position.

11. The recliner assembly of Claim 10, wherein said first pawl includes a recess formed between said first and second arms.

12. The recliner assembly of Claim 11 further comprising a post fixedly attached to said first housing plate, said post slidably engaging said recess of said first pawl and operable to define a range of movement for said first pawl between said locked and unlocked positions.

13. The recliner assembly of Claim 10 further comprising a release cam, said release cam rotatably supported by said first housing plate and operable to toggle said first pawl between said locked and unlocked positions.

14. The recliner assembly of Claim 13, wherein said release cam includes a cam surface slidably engaging said first pawl to toggle said first pawl between said locked and unlocked positions.

15. The recliner assembly of Claim 10, wherein said main cam further comprises a third and fourth extension, said third and fourth extension formed opposite said first and second extensions.

16. The recliner assembly of Claim 15 further comprising a second locking cam and a second pawl, said second pawl including a first arm and a second arm.

17. The recliner assembly of Claim 16, wherein said third extension of said main cam is in abutting engagement with said second locking cam and said fourth extension of said main cam is disposed a predetermined distance from said second arm of said second pawl when said second pawl is in a locked position.

18. A seat assembly comprising:

a seat bottom;

a seat back pivotably supported by said seat bottom; and

a recliner assembly disposed between said seat bottom and said seat back to selectively restrict rotation of said seat back relative to said seat bottom, said recliner assembly comprising:

a first housing plate fixedly attached to one of the seat bottom and seat back;

a second housing plate rotatably supported by said first housing plate and fixedly attached to the other of said seat bottom and seat back;

a first pawl movable between a locked position engaging said second housing plate and an unlocked position disengaged from said second housing plate, said pawl operable to apply a primary force to said second housing plate in a locked position having a first force component generally normal to the engagement of said pawl and said second housing plate and a second force component generally perpendicular to said first force component;

a first locking cam rotatably supported by said first housing plate; and

a main cam rotatably supported by said first housing plate, said main cam operable to selectively rotate said first locking cam into engagement with said first pawl to urge said first pawl into said locked position.

19. The seat assembly of Claim 18 further comprising a release cam, said release cam rotatably supported by said first housing plate and operable to toggle said first pawl between said first and second positions.

20. The seat assembly of Claim 19, wherein said release cam includes a cam surface slidably engaging said first pawl to toggle said first pawl between said locked and unlocked positions.

21. The seat assembly of Claim 20 further comprising a handle, said handle coupled to said release cam to selectively toggle said recliner assembly between said locked and unlocked positions in response to an external force applied thereto.

22. The seat assembly of Claim 18 further comprising a biasing member, said biasing member acting on said main cam to bias said main cam into engagement with said first locking cam to thereby urge said first pawl into said locked position.

23. The seat assembly of Claim 28 further comprising a second pawl and a second locking cam, said second locking cam operable to urge said second pawl into engagement with said first housing plate in response to rotation of said main cam to thereby selectively prevent rotation of said second housing plate relative to said first housing plate.

24. The seat assembly of Claim 23 further comprising a gap disposed between said first and second pawls and said main cam when said first and second pawls are in said locked position, said gap operable to allow interaction between said first and second pawls and said main cam to further lock said first housing plate to said second housing plate when a predetermined load is applied to said seat bottom or said seat back.

25. The seat assembly of Claim 18, wherein said primary force is applied to said first pawl at an angle between 14-22°.